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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,543	03/17/2004	Gerard Hillion	PET-2130	2321

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EXAMINER

WARTALOWICZ, PAUL A

ART UNIT	PAPER NUMBER
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1754

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/801,543

Applicant(s)

HILLION ET AL.

Examiner

Paul A. Wartalowicz

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 2/9/07 have been fully considered but they are not persuasive.

Applicant argues that is maintained that the patent does not teach or suggest a process in which, first, zinc oxide and zinc nitrate or carbonate are, as a mixture mixed with alumina gel that has been peptized in the presence of water and nitric acid, so as to form a paste.

However, the recitation pointed to by the applicant does not exclude a mixture of zinc oxide and zinc carbonate as follows: "mixing *at least one* zinc compound". The prior art is open to include a mixture of zinc carbonate and zinc oxide. Additionally, the rejection does not rely upon Stern et al. teaching that the mixture (zinc carbonate and zinc oxide) is mixed with an alumina gel that has already been peptized. The rejection does state, however, that it would be obvious to one of ordinary skill in the art to make changes in sequence of adding ingredients (*In re Rose*, 105 USPQ 137) such as peptizing an alumina prior to mixing with a mixture of zinc oxide and zinc carbonate.

Applicant argues that the comparative example 1 show unexpected results that show that the catalysts produced in accordance with the present invention differ physically from those known in the prior art, thus providing basis for patentability of claims 14, 15, 19, and 20.

However, the prior art does teach a mixture of zinc oxide and zinc carbonate and is therefore *not* equivalent to the comparison made in applicant's specification. It is maintained that the prior art teaches a substantially similar process as that of the claimed invention such that that product produced by said process should be substantially similar to that of the claimed invention. Additionally, it is pointed out that claim 20 is canceled and any argument directed thereto is therefore moot.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 16, and 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The recitation of the range wherein 10-50% of the zinc oxide is replaced by an equivalent amount of at least one zinc nitrate (or carbonate) does not appear to have support in the specification. Applicant is required to point out the recitation in the specification wherein the *range* 10-50% has support. Applicant has pointed out that page 3, lines 3-5 and Example 5 render support to this range. However, the specification appears to only lend support to the ranges of 10-100% and 25-40%, not

Art Unit: 1754

10-50%. Example 5 recites a data point of 50% and is not support for an endpoint to a range.

Correction and/or clarification is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stern et al. (U.S. 5908946) in view of Khare et al. (U.S. 5710091) and Andersen et al. (U.S. 5830305) and Walker (U.S. 4370310).

Stern et al. teach a process for making ZnAl_2O_4 , $x \text{ ZnO}$, $y \text{ Al}_2\text{O}_3$ whereby x and y are in the range of 0-2 wherein zinc oxide and zinc carbonate (stage (a)) are mixed with hydrated alumina in nitric acid (hydrated alumina is alumina gel, col. 5, lines 40-47) (stage (b)) and wherein the paste formed is extruded (stage (c)), dried (stage (d)), and then calcined (stage (e)) (col. 5, lines 45-49) and wherein the mixed product is shaped

Art Unit: 1754

by extrusion after mixing step (inherently teaches the limitation wherein water is added during the mixing to reach a suitable consistency of the paste, col. 5, lines 45-49).

Stern et al. fail to teach the temperatures and time periods of stages a, b, and c.

Stern also fail to teach the amount of zinc oxide replaced with either zinc carbonate or zinc nitrate, sequence of mixing nitric acid, zinc compounds, and alumina, the size of the extruding die.

As to the limitation in claims 1 and 16 of alumina gel has been peptized before mixing with a mixture obtained in stage (a), it would be obvious based upon the explanation that it would be obvious to one of ordinary skill in the art to make changes in sequence of adding ingredients (*In re Rose*, 105 USPQ 137) such as peptizing an alumina prior to mixing with a mixture of zinc oxide and zinc carbonate.

As to the limitation in claim 16 of mixing an alumina gel with a mixture of zinc oxide and a zinc carbonate or nitrate, and optionally extruding, drying and calcining a resultant paste, it would be obvious based upon the explanation that it would be obvious to one of ordinary skill in the art to make changes in sequence of adding ingredients (*In re Rose*, 105 USPQ 137) such as mixing the zinc compounds prior to mixing the zinc mixture with alumina gel.

Khare teaches a method of making zinc aluminate (col. 1) wherein a mixture of zinc oxide and zinc nitrate or zinc carbonate (col. 1) which is contacted with nitric acid (col. 2, 3) is combined with alumina peptized with nitric acid (col. 3) to form a paste (col. 3).

Art Unit: 1754

From this disclosure, it would have been obvious to one of ordinary skill in the art to provide operating conditions such as 30 to 60 minutes reaction time to form a mixture of zinc oxide with zinc nitrate or zinc carbonate and nitric acid as disclosed by Khare and 60 to 120 minutes of mixing time to form a paste of zinc compounds and peptized alumina (col. 2, 3) in Stern et al. through routine experimentation so as to obtain a mixture and paste thoroughly mixed as taught by Khare et al.

Additionally, Khare et al. teach that it is known to use a suitable means for mixing such as muller mixers and impact mixers as these are well known in the art to provide for thorough mixing (col. 3).

Khare et al. teach that mixtures of zinc oxide and zinc carbonate or zinc nitrate can be used because these zinc compounds combine with alumina to form zinc aluminate (col. 1).

It would be obvious to replace zinc oxide with zinc carbonate or zinc nitrate in the claimed amounts as dictated by cost optimization and that under calcining conditions, the zinc compounds mixed with the alumina form zinc aluminate.

Walker teaches a method of making zinc aluminate (col. 1) wherein it is known to react zinc oxide with alumina at elevated temperatures (col. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a temperature of 60-65°C in Stern et al. because it is known in the art of producing zinc aluminate to react zinc oxide and

Art Unit: 1754

alumina at elevated temperatures and that the reaction temperature could be readily determined through routine experimentation.

As to the limitation wherein stage (c) consists in extruding the paste that is thus obtained from a die with a diameter of between 1.5 and 3.7 mm of diameter, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide extruding paste that is thus obtained from a die with a diameter between 1.5 and 3.7 mm of diameter in order to obtain a size desirable for the end use of the product. Changes in size would have been obvious to one of ordinary skill in the art. *In re Rose* 105 USPQ 237 (See MPEP 2144.04).

As to the limitation wherein a pressure of higher than 2 MPa is exerted on the die so as to obtain compact extrudates that have a flawless surface condition and wherein at the end of operation the pressure again becomes less than 2 MPa, the recovered extrudates are not preserved, Andersen et al. teaches wherein it is well known to impart pressure on dies of from 50 psi to 20000 psi for the purpose of maximizing strength and structural intensity (paragraph 253, lines 1-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to exert pressure on a die, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. *In re Boesch*, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to exert a pressure on a die by the reasoned explanation that it is well known

Art Unit: 1754

to impart pressure on dies of from 50 psi to 20000 psi for the purpose of maximizing strength and structural intensity (paragraph 253, lines 1-12).

As to the limitation wherein the recovered extrudates are not preserved, it would be obvious to not impart pressure on dies at the above mentioned pressures if the desired effect was to not impart strength and structural intensity as taught by Andersen et al.

Walker teaches a process for making zinc aluminate (col. 1) wherein a paste of zinc oxide and alumina hydrate are dried in a forced draft oven (col. 3) depending on the size of the extrudate or other physical shape in which the paste has been formed (col. 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the drying conditions of the extrudate, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. In re Boesch, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to optimize the drying conditions of the extrudate by the reasoned explanation that drying conditions are based upon size and shape of the extrudate and one of ordinary skill would readily determine optimum drying conditions through routine experimentation.

Art Unit: 1754

Claims 1-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khare et al. (U.S. 5710091) in view of Walker (U.S. 4370310) and Andersen et al. (U.S. 5830305).

Khare et al. teach a process for preparing zinc aluminate (col. 1) wherein a mixture of zinc compounds comprising zinc oxide and zinc carbonate or zinc nitrate (col. 1) is mixed with nitric acid (col. 3) which is subsequently mixed with alumina that has been mixed with nitric acid (col. 3) wherein the mixture of zinc compounds and alumina are dried and calcined (col. 3).

Khare et al. fail to teach the temperatures and time periods of stages a, b, and c. Khare et al. also fail to teach the size of the extruding die and the pressure at which the paste is extruded.

Khare teaches a method of making zinc aluminate (col. 1) wherein a mixture of zinc oxide and zinc nitrate or zinc carbonate (col. 1) which is contacted with nitric acid (col. 2, 3) is combined with alumina peptized with nitric acid (col. 3) to form a paste (col. 3).

From this disclosure, it would have been obvious to one of ordinary skill in the art to provide operating conditions such as 30 to 60 minutes reaction time to form a mixture of zinc oxide with zinc nitrate or zinc carbonate and nitric acid as disclosed by Khare and 60 to 120 minutes of mixing time to form a paste of zinc compounds and peptized alumina (col. 2, 3) in Stern et al. through routine experimentation so as to obtain a mixture and paste thoroughly mixed as taught by Khare et al.

Additionally, Khare et al. teach that it is known to use a suitable means for mixing such as muller mixers and impact mixers as these are well known in the art to provide for thorough mixing (col. 3).

Khare et al. teach that mixtures of zinc oxide and zinc carbonate or zinc nitrate can be used because these zinc compounds combine with alumina to form zinc aluminate (col. 1).

It would be obvious to replace zinc oxide with zinc carbonate or zinc nitrate in the claimed amounts as dictated by cost optimization and that the under calcining conditions, the zinc compounds mixed with the alumina form zinc aluminate.

Khare et al. fail to teach that the mixture of zinc compounds and alumina is extruded, but instead forms a paste that is spray-dried (col. 3).

However, Walker teach a process for making zinc aluminate (col. 1) wherein it is known to form a paste and extrude the paste into a desirable shape based on the end use of the product (col. 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide for an extrusion step in place of the spray drying step in Khare et al. based upon the end use of the product (col. 2) as taught by Walker.

Walker teaches a method of making zinc aluminate (col. 1) wherein it is known to react zinc oxide with alumina at elevated temperatures (col. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a temperature of 60-65°C in Stern et al. because it is known in the art of producing zinc aluminate to react zinc oxide and alumina at elevated temperatures and that the reaction temperature could be readily determined through routine experimentation.

Walker teaches a process for making zinc aluminate (col. 1) wherein a paste of zinc oxide and alumina hydrate are dried in a forced draft oven (col. 3) depending on the size of the extrudate or other physical shape in which the paste has been formed (col. 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the drying conditions of the extrudate, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. In re Boesch, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to optimize the drying conditions of the extrudate by the reasoned explanation that drying conditions are based upon size and shape of the extrudate and one of ordinary skill would readily determine optimum drying conditions through routine experimentation.

As to the limitation wherein stage (c) consists in extruding the paste that is thus obtained from a die with a diameter of between 1.5 and 3.7 mm of diameter, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide extruding paste that is thus obtained from a die with a diameter

Art Unit: 1754

between 1.5 and 3.7 mm of diameter in order to obtain a size desirable for the end use of the product. Changes in size would have been obvious to one of ordinary skill in the art. *In re Rose* 105 USPQ 237 (See MPEP 2144.04).

As to the limitation wherein a pressure of higher than 2 MPa is exerted on the die so as to obtain compact extrudates that have a flawless surface condition and wherein at the end of operation the pressure again becomes less than 2 MPa, the recovered extrudates are not preserved, Andersen et al. teaches wherein it is well known to impart pressure on dies of from 50 psi to 20000 psi for the purpose of maximizing strength and structural intensity (paragraph 253, lines 1-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to exert pressure on a die, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. *In re Boesch*, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to exert a pressure on a die by the reasoned explanation that it is well known to impart pressure on dies of from 50 psi to 20000 psi for the purpose of maximizing strength and structural intensity (paragraph 253, lines 1-12).

As to the limitation wherein the recovered extrudates are not preserved, it would be obvious to not impart pressure on dies at the above mentioned pressures if the desired effect was to not impart strength and structural intensity as taught by Andersen et al.

Conclusion

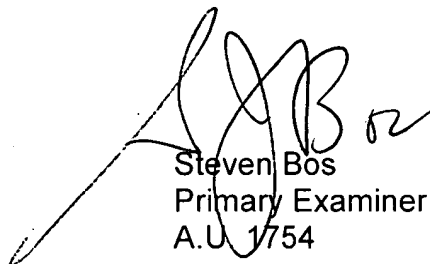
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Wartalowicz whose telephone number is (571) 272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Paul Wartalowicz
April 10, 2007



Steven Bos
Primary Examiner
A.U. 1754